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EXAMINER

HERTZOG, ARDITH E

ART UNIT PAPER NUMBER

1754

DATE MAILED: 09/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/914,452

Applicant(s)

MILNER ET AL.

Examiner

Ardith E. Hertzog

Art Unit

1754

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 August 2001 and 31 May 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8 and 13-15 is/are rejected.
- 7) ☒ Claim(s) 7, 9-12 and 16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 5/31/02 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 8/27/01.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Priority/Response to Amendment

1. This application has been filed under 35 U.S.C. § 371 based upon International Application PCT/GB00/00685, filed February 28, 2000, and published (in English) as WO 00/51135 on August 31, 2000. In accordance with MPEP § 1893.03(e), acknowledgement is made of the corresponding International Search Report (Form PCT/IPEA/210) and International Preliminary Examination Report (Form PCT/IPEA/409). Acknowledgment is also made of applicant's claim for domestic priority under 35 U.S.C. § 119(e) based upon the following provisional applications: 60/121,854, filed February 26, 1999, and 60/122,833, filed March 4, 1999. Applicant's preliminary amendment **officially** filed May 31, 2002 (i.e., the date on which the last of the 35 U.S.C. § 371 requirements has been received in the Office) has been entered, and claims 1-16, per said amendment, are now pending. **However:**
2. Said preliminary amendment is objected to under 35 U.S.C. § 132, **because it introduces new matter into the disclosure.** 35 U.S.C. § 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: that section of the amendment to the first page of the specification beginning **after** "filed March 4, 1999"—namely: " , the disclosures of which are incorporated herein by reference in their entirety. The above PCT International Application was published in the English language and has International Publication No. WO 00/51135." **Clearly**, in what

language applicant's corresponding International Application was published and under what number is new matter, since such disclosure **must** be added **after** applicant's filing date (i.e., the international filing date of the international application, per PCT Article 11(3) and 35 U.S.C. § 363). **Moreover**, as explained in MPEP § 608.01(p) I. B.:

As a safeguard against the omission of a portion of a prior application for which priority is claimed under 35 U.S.C. § 119(a)-(d) or (f), **or for which benefit is claimed under 35 U.S.C. §119(e)** or 120, applicant may include a statement at the time of filing of the later application incorporating by reference the prior application. See MPEP § 201.06(c) where domestic benefit is claimed. See MPEP § 201.13 where foreign priority is claimed. The inclusion of such an incorporation by reference statement in the later-filed application will permit applicant to include subject matter from the prior application into the later-filed application without the subject matter being considered as new matter. **For the incorporation by reference to be effective as a proper safeguard, the incorporation by reference statement *must* be filed at the time of filing of the later-filed application. An incorporation by reference statement added after an application's filing date is *not* effective because no new matter can be added to an application after its filing date (see 35 U.S.C. § 132(a)).** (emphasis added)

Applicant is required to *cancel* the new matter in the reply to this Office Action.

Information Disclosure Statement

3. Receipt is hereby acknowledged of the information disclosure statement filed August 27, 2001. As the submission is in compliance with the provisions of 37 CFR § 1.97, it has been considered, in accordance with the enclosed PTO-1449.

Oath/Declaration

4. **Initially**, it is noted that, **with respect to the name change of inventor Charles Edward Morren**, the declaration **has** been accepted, in accordance with the 37 CFR § 1.182 Petition Decision mailed October 25, 2202. **However**:

5. The declaration is considered defective, because:

The claim to **foreign** priority benefits to the "parent" PCT (international) application (i.e., PCT/GB00/00685) is incorrect, since the instant application is considered **the same as** this "parent" PCT application, **the only difference being that it has now entered the national stage under 35 U.S.C. § 371**, as noted *supra* (that is, the "parent" PCT application is **not** a "prior filed international application", per 35 U.S.C. § 365(a) (emphasis added)).

Note that the "parent" PCT application is **already** identified by applicant's statement in the declaration that the instant specification "was filed... as United States Application No. 09/914,452", this US application being that which **corresponds to** PCT International Application Number PCT/GB00/00685 (per the "371 Acceptance Letter" mailed November 18, 2002). **Accordingly**, a new declaration (or oath) in compliance with 37 CFR § 1.67(a), **or** application data sheet (see 37 CFR § 1.76 and MPEP § 601.05), identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

Minor Informalities

6. The disclosure is objected to, because of the following minor informalities:
 - a. In the preliminary amendment to page 1, the "Cross-References to Related Applications" paragraph is written incorrectly (i.e., **in addition to** the new matter objection discussed in paragraph 2. above). As explained in MPEP § 1893.03(c):

Note: a national stage application submitted under 35 U.S.C. § 371 may not claim benefit of the filing date of the international application of which it is the national stage since its filing date is the date of filing of that international application. See also MPEP § 1893.03(b). Stated differently, since the international application is not an earlier application (it has the same filing date as the national stage), ... , **it is not necessary for the applicant to amend the first sentence of the specification to reference the international application number that was used to identify the application during international**

processing of the application by the international authorities prior to commencement of the national stage. (emphasis added)

Accordingly, it is suggested that this paragraph be revised as follows: "This application claims the benefit of United States Provisional Application No. 60/121,854, filed February 26, 1999, and United States Provisional Application No. 60/122,833, filed March 4, 1999." **See also MPEP § 201.11 III. B.**

- b. At page 1, line 23, it is suggested that "PWR" be revised as "pressurized water reactor (PWR)", for clarity.
- c. At page 3, line 5, evidently "and" should be inserted after "physical", for consistency with Figure 1.
- d. At page 3, line 8, it is suggested that "LLW" be revised as "low level waste (LLW)", for clarity.
- e. At page 3, line 11, it is suggested that "non-RCRA" be revised as "non-RCRA (Resource Conservation and Recovery Act)", for clarity.
- f. "While there is no set statutory form for claims, the present Office practice is to insist that each claim must be the object of a sentence starting with 'I (or we) claim,' 'The invention claimed is' (or the equivalent)" (see MPEP § 608.01(m)).
- g. In claim 2, it is suggested that "is" be revised as "solution comprises", for consistency with claim 1 (upon which claim 2 depends) (as well as claim 16).

Appropriate correction of all the above is required.

Specification

- 7. The specification is objected to under 37 CFR § 1.74, because there is no "Brief Description of the Several Views of the Drawing(s)" section; see MPEP § 608.01(f).

Appropriate correction is required.

8. The use of the trademark "Inconel" has been noted in this application (see p. 1, line 23), as has the use of the trademark "Nalclear" (see p. 11, line 13). **Any trademark should be capitalized wherever it appears and be accompanied by the generic terminology, as much as possible.** Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Claim Rejections - 35 U.S.C. § 112

9. The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 4-6, 8 and 15 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Said claims are considered vague, indefinite, and/or confusing, due to antecedent basis problems. With respect to claim 4 (upon which claims 5 and 6 at least indirectly depend), neither the claim itself nor claim 1 (upon which claim 4 depends) provides proper antecedent basis for "**the** sodium hydroxide" (emphasis added), as recited therein. Deleting "the" before "sodium hydroxide" in claim 4 would overcome this aspect of this rejection. With respect to claim 8, neither the claim itself nor claim 1 (upon which claim 8 depends) provides proper antecedent basis for "**the residual** hexacyanoferrate" (emphasis added), as recited therein. Perhaps "residual" should be replaced with "nickel" in claim 7? With respect to

claim 15, neither the claim itself nor claim 1 (upon which claim 15 depends) provides proper antecedent basis for "**the supernatant liquid**" (emphasis added), as recited therein. It appears that this aspect of this rejection could be overcome by revising "prior to disposal of the supernatant liquid" as "and then the resulting supernatant liquid is disposed" (or some similar language of applicant's choosing). Appropriate correction of all aspects of this rejection is required.

Claim Rejections - 35 U.S.C. § 103

11. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1, 3, 13 and 15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Mihram et al. (US 3,873,362) in view of Chowdhury et al. (US 6,254,312 B1). Mihram et al. teach processes for cleaning radioactively contaminated metal surfaces, specifically a ferrous metal surface, comprising: initially pre-conditioning the surface by contacting it with an oxidizing solution; contacting it with a cleaning solution, after removal of the oxidizing solution; and finally, treating the spent cleaning solution containing radioactive waste materials (see Mihram et al. abstract). The Mihram et al. oxidizing solution may comprise an aqueous solution of nitric acid (see col. 2, lines 45-55, especially lines 53-54), and the Mihram et al. cleaning solution, which generally comprises "mixtures of mineral acids with complexing agents", may comprise various acids, such as sulfuric or nitric acid(s), in combination with oxalic, citric

or formic acid, and optionally further comprise nitric acid as a corrosion inhibitor (see col. 3, line 55 – col. 4, line 2). **Thus**, Mihram et al. **clearly** teach methods “of treating a radioactively contaminated metal object comprising contacting the object with an acid solution to cause dissolution of a surface layer of the metal object”, per the first step of applicant’s independent claim 1. The Mihram et al. spent cleaning solution is treated with “a reagent selected from the group consisting of calcium hydroxide or potassium permanganate and an alkali metal hydroxide to thereby form easily recovered metallic compounds containing substantially all the dissolved metals and radioactivity (see again Mihram et al. abstract, especially last sentence). **Moreover**, in the preferred Mihram et al. processes, two methods of such treatment are disclosed, with the “first and most suitable of these... being the addition of calcium hydroxide in an amount slightly exceeding the amount required to neutralize the sulfuric and oxalic acid...” (see col. 4, line 56 – col. 5, line 11, especially col. 5, lines 1-4). **Thus**, Mihram et al. **further clearly** teach “raising the pH of the resultant solution with calcium hydroxide” “to cause dissolved metal to separate from the solution in solid form”, per the second step of applicant’s independent claim 1. Mihram et al. **also** teach that “the resultant solution” may be “subjected to ion exchange to effect caesium removal” (see col. 5, lines 54-58; col. 6, lines 60-63 (“caesium” clearly within the scope of the “radionuclides”/ “radioactive materials” discussed by Mihram et al. therein)), per instant claim 13; Mihram et al. **also** teach that “the resultant solution is subjected to mechanical filtration prior to disposal of the supernatant liquid” (see col. 5, lines 46-49), per instant claim 15. **However**, Mihram et al. fail to teach the use of “a magnesium containing compound” **in concert with** the

calcium hydroxide, per instant claim 1, when treating the spent cleaning solution.

13. Chowdhury et al. teach methods for stabilizing arsenic in a waste matrix (see Chowdhury et al. abstract), i.e., in the broadest sense, waste-treating methods as disclosed in the Mihram et al. patent. Chowdhury et al. **explicitly** teach that calcium hydroxide and dolomitic lime (i.e., the same component used in applicant's working example on instant p. 11) are **functionally equivalent** "pH control agents for raising pH"; it is further noted that these compounds have no "significant environmental impact" (see col. 5, lines 27-36). **Accordingly**, it would have been obvious to one of ordinary skill in the art, at the time of applicant's invention, to have at least partially substituted dolomitic lime for the calcium hydroxide—also used to control pH—in the Mihram et al. processes, because, as just discussed, Chowdhury et al. teach that these compounds are not only functionally equivalent pH control agents for use in similar processes, but also environmentally beneficial. When having done so, it is respectfully submitted that, absent contrary evidence, methods falling within the scope of instant claims 1 and 3 would have obviously resulted.

14. Claim 2 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Mihram et al. in view of Chowdhury et al., as applied to claim 1 above, and **further** in view of **either** Hanulik (US 4,828,759) **and/or** Kunze et al. (US 4,902,351). Mihram et al. and Chowdhury et al. are relied upon as set forth in paragraphs 12. –13. above, having rendered *prima facie* obvious applicant's independent claim 1 (upon which instant claim 2 depends). While the primary reference, Mihram et al., teaches that **both** the pre-conditioning oxidizing solution **and** the cleaning solution may comprise nitric acid, **the**

combination of nitric and hydrofluoric acids, as required by instant claim 2, is not disclosed therein.

15. In the "BACKGROUND OF THE INVENTION" section of **both** the Hanulik and Kunze et al. patents, it is stated that **the combination of nitric and hydrofluoric acids** has been **long** known in the art of decontaminating radioactively contaminated metals.

In particular, Hanulik discloses:

In the past, the contaminated surface layers of reactor cooling conduits were frequently removed by means of aqueous mineral acid solutions. One such decontamination solution, with 20% nitric acid and 3% hydrofluoric acid, is cited, for example, in "Kernenergie" 11th year, 1968, page 285. (col. 1, lines 20-26)

Similarly, Kunze et al. disclose:

In a summarizing report entitled... in translation, "Contamination and Decontamination of Surfaces", in *Kernenergie*, in translation, *Nuclear Energy*, Vol. 5, 1962, pages 585-600, H. F. Moldenhawer describes a number of different decontamination methods and a number of decontamination agents. The large majority of the listed decontamination agents are used in the form of aqueous solutions. ... For example, Moldenhawer mentions, among others, a solution of 3% HF+20% HNO₃, referred to as a 3-20 reagent, as a decontamination agent for stainless steel. (col. 1, lines 14-32)

Accordingly, when having combined the teachings of Mihram et al. and Chowdhury et al. as set forth *supra*, it would have been **further** obvious to one of ordinary skill in the art, at the time of applicant's invention, to have at least partially substituted a **mixture of nitric and hydrofluoric acids** for the nitric acid used in the Mihram et al. processes, because, as just discussed, the disclosures of **either** the Hanulik **and/or** the Kunze et al. patents establish that such mixtures were well known in the art for their effectiveness in decontaminating radioactively contaminated metals. When having done so, it is

respectfully submitted that, absent contrary evidence, methods falling within the scope of instant claim 2 would have obviously resulted.

16. Claim 14 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Mihram et al. in view of Chowdhury et al., as applied to claim 13 above, and **further** in view of Komarneni et al. (US 4,808,318). Mihram et al. and Chowdhury et al. are again relied upon as set forth in paragraphs 12. –13. above, having rendered *prima facie* obvious instant claim 13 (upon which instant claim 14 depends). While the primary reference, Mihram et al., teaches the ion exchange step of instant claim 13, the **specific** ion exchange resin, “clinoptillolite”, as required by instant claim 14, is not disclosed therein.

17. In the “BACKGROUND OF THE INVENTION” section of the Komarneni et al. patent, it is established that the use of clinoptilolite as a cation exchange resin, effective for removal of the radioactive waste, cesium, is known in the art of cesium decontamination and immobilization processes. **In particular**, Komarneni et al. disclose:

Certain cation exchange resins and various cation exchangers are available which are selective for the recovery of cesium from solution. These include clay minerals and zeolites, both naturally occurring and synthetic. ... Other natural zeolites include **clinoptilolite**, erionite and chabazite. (col. 1, lines 31-39, emphasis added)

Accordingly, when having combined the teachings of Mihram et al. and Chowdhury et al. as set forth *supra*, it would have been **further** obvious to one of ordinary skill in the art, at the time of applicant's invention, to have used the **specific** ion exchange resin, clinoptilolite, when having employed an ion exchange step in the Mihram et al.

processes, because, as just discussed, the Komarneni et al. patent establishes that this specific ion exchange resin was known in the art for its effectiveness in recovering cesium from solution. When having done so, it is respectfully submitted that, absent contrary evidence, methods falling within the scope of instant claim 14 would have obviously resulted.

Allowable Subject Matter

18. Claims 4-6 and 8 would be allowable ***if rewritten to overcome the 35 U.S.C. § 112, second paragraph, rejection, as set forth in paragraph 10. above, and to include all limitations of the base claim and any intervening claims.***

19. Claims 7, 9-12 and 16 are objected to as being dependent upon a rejected base claim but would be allowable ***if rewritten in independent form including all limitations of the base claim and any intervening claims.***

20. The following is a statement of reasons for the indication of allowable subject matter: The closest prior art of record is considered to be the primary reference applied *supra*, i.e., the Mihram et al. patent. **With respect to instant claims 4-6**, Mihram et al. provide no teaching nor suggestion to have used sodium hydroxide **in addition to** calcium hydroxide, as **required** by instant claim 4 (upon which instant claims 5-6 depend), **when utilizing the calcium hydroxide-containing cleaning solution** disclosed by this patent. Although the use of sodium hydroxide is disclosed by Mihram et al., it is **only in the context of utilizing the potassium permanganate-containing cleaning solution** (see col. 5, lines 12-31), an embodiment **clearly distinct from** that utilizing the calcium hydroxide-containing cleaning solution (see also Mihram et al.

abstract, the last sentence, **as well as** col. 4, lines 62-67, noting that the use of “alkaline earth hydroxides” is **clearly distinct from** the use of “an alkali metal permanganate followed by a pH adjusting basic material”). **With respect to instant claims 7-8**, neither the Mihram et al. patent nor the remaining prior art of record teaches or would have suggested utilizing the **very specific** component, nickel hexacyanoferrate, as required by instant claim 7 (upon which instant claim 8 depends), in any step of the Mihram et al. processes. **With respect to instant claims 9-10**, neither the Mihram et al. patent nor the remaining prior art of record teaches or would have suggested **specifically** adding a **polymer**... “to the resultant solution to assist settling of solids”, as required by instant claim 9 (upon which instant claim 10 depends). That is, although Mihram et al. generally teach that “a filter aid material” may be added (see col. 5, lines 46-49), there is no teaching nor suggestion in this patent (or the remaining prior art of record) to use a **polymer** as same. **With respect to instant claims 11-12**, neither the Mihram et al. patent nor the remaining prior art of record teaches or would have suggested subjecting “the resultant solution... to UV oxidation”, as required by instant claim 11 (upon which instant claim 12 depends). That is, although the use of UV oxidation in radioactive decontamination is known in this art (see, for example, Willis et al. (US 5,205,999) abstract, and Milner (US 5,523,513) col. 4, as cited herewith), the prior art of record provides no teaching nor suggestion to have incorporated a UV oxidation step **into the Mihram et al. processes**. **Thus, with respect to instant claim 16**—dependent upon applicant’s independent claim 1, requiring the acids of instant claim 2, and **further requiring the limitations of instant claims 7 and 11**—the prior

art of record provides no teaching nor suggestion to have practiced radioactive decontamination methods comprising the **very specific** steps required therein.

Conclusion

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. These references are considered **less material than** those specifically discussed above.

22. Any inquiry concerning this communication should be directed to Ardith E. Hertzog at telephone number (571) 272-1347. The examiner can normally be reached on Monday through Friday (from about 7:30 a.m. - 3:30 p.m.).

23. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley S. Silverman, can be reached at (571) 272-1358. The fax phone number for the organization where this application is assigned is 703-872-9306.

24. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. For any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


AEH
September 24, 2004


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